

APPENDIX 1

AEROACOUSTICS RESEARCH PROGRAM IN JIAFS NCC1-14

FUNDING

<u>Period</u>	<u>Award</u>	
05/15/79 - 05/14/80	89,211	New
05/15/80 - 01/31/81	87,259	Continuation for 8 1/2 Months (suppl # 1)
02/01/81 - 01/31/82	129,601	Continuation (suppl # 2)
02/01/82 - 01/31/83	104,202	Continuation (suppl # 3)
01/01/83 - 09/30/83	60,164	Continuation (suppl # 4)
10/01/83 - 10/31/83	0	No cost time extension for 1 month (suppl # 5)
11/01/83 - 10/31/84	144,723	Continuation (suppl # 6)
11/01/84 - 10/31/85	103,490	Continuation (suppl # 7)
11/01/85 - 10/31/86	152,682	Continuation (suppl # 8)
11/01/86 - 10/31/87	146,547	Continuation (suppl # 9)
11/01/87 - 10/31/88	163,540	Continuation (suppl # 10)
11/01/88 - 10/31/89	173,169	Continuation (suppl # 11)
11/01/89 - 10/31/90	186,706	Continuation (suppl # 12)
11/01/90 - 10/31/91	185,392	Continuation (suppl # 13)
11/01/91 - 10/31/92	199,127	Continuation (suppl # 14)
08/01/92 - 10/31/92	6,270	Continuation for 3 months (suppl # 15)
11/01/92 - 10/31/93	225,693	Continuation (suppl # 16)
08/01/93 - 10/31/93	6,720	Continuation for 3 months (suppl # 17)
11/01/93 - 10/31/94	257,645	Continuation (suppl # 18)
11/01/94 - 10/31/95	260,276	Continuation (suppl # 19)
11/01/95 - 10/31/96	260,893	Continuation (suppl # 20)
09/01/96 - 08/31/97	19,940	Supplemental funding within the current period and the addition of 10 months (suppl # 21)
11/01/96 - 10/31/97	265,766	Continuation (suppl # 22)
11/01/97 - 10/31/98	223,000	Continuation (suppl # 23 - incremental funding)
11/01/97 - 10/31/98	(42,667)	Deobligation of funds (NASA error) (suppl # 24)
11/01/98 - 10/31/99	171,925	Renewal (suppl # 25)
11/01/99 - 11/30/99	0	No cost time extension (suppl # 26)
11/30/99	(19,011)	02/15/00 - Deobligation of funds (suppl # 27)
11/30/99		NCC1-14 Close-out

Since its inception in May 1979, the program has provided support for a total of 45 Graduate Research Scholar Assistants. Of these, 37 have completed their MS/DSc degree program. The program has generated 36 theses and dissertations and a total of 89 publications/presentations. The total funding through the grant is \$3,604,930.

APPENDIX 2

AEROACOUSTICS RESEARCH PROGRAM IN JIAFS NCC1-14

PERSONNEL

Period 05/15/79 - 05/14/80 - Faculty:

M. K. Myers, Professor
J. L. Whitesides*, Associate Professor
S. W. Yuan*, Professor

Students

Sue-Li Chuang (DSc)

Graduates

Period 05/15/80 - 01/31/81 - Faculty:

M. K. Myers, Professor
J. L. Whitesides*, Professor
R. H. Korkegi*, Visiting Professor

Students

Sue-Li Chuang (DSc)
Michael G. Jones
Lyle N. Long (DSc)
Kenji Uenishi (DSc)

Graduates

Period 02/01/81 - 01/31/82 - Faculty:

M. K. Myers, Professor
J. L. Whitesides*, Professor
R. H. Korkegi*, Visiting Professor

Students

Sue-Li Chuang (DSc)
Michael G. Jones
Lyle N. Long (DSc)
Kenji Uenishi (DSc)

Graduates

Michael G. Jones

Period 02/01/82 - 01/31/83 - Faculty:

M. K. Myers, Professor
J. L. Whitesides*, Professor
S. W. Yuan*, Professor

Students

Sue-Li Chuang (DSc)
Lyle N. Long (DSc)
Kenji Uenishi (DSc)

Graduates

Period 01/01/83 - 09/31/83 - Faculty:

M. K. Myers, Professor
J. L. Whitesides*, Professor
S. W. Yuan*, Professor

Students

Lyle N. Long (DSc)
Kenji Uenishi (DSc)

Graduates

Lyle N. Long (DSc)
Kenji Uenishi (DSc)

Period 11/01/83 - 10/31/84 - Faculty:

M. K. Myers, Professor
J. L. Whitesides*, Professor
S. W. Yuan*, Professor

Students

Jeffrey L. Adelman
David B. Schein
Christian J. Schwindt
Perry R. Ziegenbein

Graduates

Sue-Li Chuang (DSc)

Period 11/01/84 - 10/31/85 - Faculty:

M. K. Myers, Professor
J. L. Whitesides*, Professor
S. W. Yuan*, Professor Emeritus

Students

Jeffrey L. Adelman
Robert L. Milliken
David B. Schein
Christian J. Schwindt
Perry R. Ziegenbein

Graduates

Jeffrey L. Adelman
David B. Schein
Perry R. Ziegenbein

Period 11/01/85 - 10/31/86 - Faculty:

M. K. Myers, Professor
J. L. Whitesides*, Professor
S. W. Yuan*, Professor Emeritus

Students

Robert L. Milliken
Christian J. Schwindt
Jean S. Smith

Graduates

Robert L. Milliken
Christian J. Schwindt

Period 11/01/86 - 10/31/87 - Faculty:

M. K. Myers, Professor
J. L. Whitesides*, Professor
S. W. Yuan*, Professor Emeritus

Students

Steven B. Abler
J. Micah Downing
Judith M. Hoeffner
H. Gail Sandford

Graduates

Period 11/01/87 - 10/31/88 - Faculty

M. K. Myers
J. L. Whitesides*

Students

J. Micah Downing
Judith M. Hoeffner
John T. Post
Richard Wydeven

Graduates

J. Micah Downing
Judith M. Hoeffner
H. Gail Sandford

Period 11/01/88 - 10/31/89 - Faculty

M. K. Myers
J. L. Whitesides*

Students

J. Scott Hausmann
Nicholas T. Lagen
John T. Post
Gregory T. Szczepkowski
Richard Wydeven

Graduates

Steven B. Abler

Period 11/01/89 - 10/31/90 -

M. K. Myers
J. L. Whitesides*

Students

Kimberly Grimm
J. Scott Hausmann
Nicholas T. Lagen
John T. Post
Gregory T. Szczepkowski
Ernest M. Thurlow
Richard Wydeven

Graduates

J. Scott Hausmann
Nicholas T. Lagen
John T. Post
Gregory T. Szczepkowski
Richard Wydeven

Period 11/01/90 - 10/31/91 - Faculty

M. K. Myers
J. L. Whitesides*

Students

Timothy J. Coates
Charles Carrano
Justin H. Lan
David P. Lockard
Douglas M. Nark
Ernest M. Thurlow

Graduates

Period 11/01/91 - 10/31/92 - Faculty

M. K. Myers
J. L. Whitesides*

Students

Charles Carrano
Timothy J. Coates
Justin H. Lan
David P. Lockard
Douglas M. Nark
Ernest M. Thurlow

Graduates

Douglas M. Nark
Ernest M. Thurlow

Period 11/01/92 - 10/31/93 - Faculty

M. K. Myers

Students

Jason K. Buhler
Timothy J. Coates
Peter C. Holland
Justin H. Lan
Jonathan C. Lawrence
David P. Lockard
Douglas M. Nark (DSc)
Royce W. Snider
Edward T. Tanner

Graduates

Timothy J. Coates
Justin H. Lan
David P. Lockard
Royce W. Snider

Period 11/01/93 - 10/31/94 - Faculty

M. K. Myers

Students

Jason K. Buhler
Peter C. Holland
Craig A. Hunter (DSc)
Jonathan C. Lawrence
Douglas M. Nark (DSc)
Edward T. Tanner

Graduates

Jason K. Buhler

Period 11/01/94 - 10/31/95 - Faculty

M. K. Myers

Students

Christian M. Fernholz
Melvin Kosanchick
Peter C. Holland
Craig A. Hunter (DSc)
Jonathon C. Lawrence
Douglas M. Nark (DSc)

Graduates

Peter C. Holland
Jonathon C. Lawrence

Period 11/01/95 - 10/31/96 - Faculty:

M. K. Myers

Students

Jared S. Cox
Christian M. Fernholz
Melvin Kosanchick
Craig A. Hunter (DSc)
Barbara A. Lakota
Douglas M. Nark (DSc)
Ross M. Stannard

Graduates

Christian M. Fernholz
Melvin Kosanchick

Period 11/01/96 - 10/31/97 - Faculty:

M. K. Myers

Students

Lawrence P. Barisciano
Jared S. Cox
Craig A. Hunter (DSc)
Barbara A. Lakota
Douglas M. Nark (DSc)
Daniel J. Stead

Graduates

Jared S. Cox

Period 11/01/97 - 10/31/98 - Faculty:

M. K. Myers

Students

Lawrence P. Barisciano
Jason L. Caton
Andrew T. Cochrane
William J. Eadie
Barbara A. Lakota
Sang W. Lee
Daniel J. Stead

Graduates

Lawrence P. Barisciano
Jason L. Caton
Barbara Lakota
Douglas M. Nark (DSc)
Daniel J. Stead

Period 11/01/98 - 11/30/99 - Faculty:

M. K. Myers

Students

Andrew T. Cochrane
William J. Eadie
Del L. Green
Sang W. Lee
Matthew B. Richter

Graduates

Andrew T. Cochrane
William J. Eadie

*No cost to the grant

Following students continuing study towards their degree:

Craig A. Hunter (DSc)
Sang W. Lee (DSc)

APPENDIX 3

AEROACOUSTICS RESEARCH PROGRAM IN JIAFS NCC1-14

THESES AND DISSERTATIONS

- "An Experimental Investigation of Sound Attenuation in a High-Subsonic Mach Number Inlet," M. G. Jones, MS Thesis, Fall 1981.
- "The Compressible Aerodynamics of Rotating Blades Using an Acoustic Formulation," L. N. Long, DSc Dissertation, Spring 1983.
- "Two Dimensional Nonlinear Theory of Shocked Sound Propagation Through Non-uniform Ducts Carrying High Subsonic Flows," K. Uenishi, DSc Dissertation, Spring 1983.
- "On the Solution for the Sound Field in a Semi-Infinite Uniform Duct with Sheared Mean Flow," Sue-li Chuang, DSc Dissertation, Spring 1984.
- "An Analytical Model for Active Control of Noise in an Absorbing Rectangular Enclosure," D. B. Schein, Summer 1985.
- "Vortex Studies Relating to Boundary Layer Turbulence and Noise," J. L. Adelman, Summer 1985.
- "Acoustic Radiation Surfaces for High Speed Rotating Blades," P. R. Ziegenbein, Summer 1985.
- "A New Lifting Surface Method: An Acoustic Approach," R. L. Milliken, Summer 1986.
- "A New Representation of the Acoustic Field of Rotating Blades with an Application to High Speed Propellers," C. J. Schwindt, Summer 1986.
- "Experimental Evaluation of a Scale Modeling Technique for Low Frequency Acoustic Propagation Over Finite Impedance Surfaces," H. G. Sandford, Fall 1987.
- "Power Flow Intensity Measurements In a Beam Utilizing a Five Accelerometer Probe," J. M. Downing, Summer 1988.
- "A Boundary Integral Approach to the Scattering of Nonplanar Acoustic Waves by Rigid Bodies," J. M. Hoeffner, Summer 1988.
- "An Experimental Analysis of Active Noise Control in a Thin Cylindrical Shell," S. B. Abler, Fall 1988.

- "Advanced Propeller Noise Prediction Employing an Asymptotic Wavefront Approximation," R. Wydeven, Fall 1988.
- "An Experimental Investigation of Ring Vortex/Cylinder Interaction Sound Production," G. T. Szczepkowski, Fall 1989.
- "Active Control of the Forced and Transient Response of a Finite Beam," J. T. Post, Fall 1989.
- "Acoustic Scattering by Moving Bodies: A Boundary Element Solution," J. S. Hausmann, Summer 1990.
- "Evaluation of Water Cooled Supersonic Pressure and Temperature Probes in a Mach 2 Jet Flow Up to 1370 K," N. T. Lagen, Summer 1990.
- "Experimental Study on Transfer Function of Flush Mounted and Recessed Pressure Transducers in Subsonic and Supersonic Flow," E. M. Thurlow, Spring 1992.
- "A Computational Aeroacoustics Approach to Sound Generation by Baffled Pistons," D. N. Nark, Summer 1992.
- "A Numerical Study of Active Structural Acoustic Control in a Double Wall Cylinder," T. J. Coats, Summer 1993.
- "Acoustic Shielding from a Short Rigid Duct Around a Propeller," J. H. Lan, Summer 1993.
- "An Investigation of Accuracy Requirements for Computational Aeroacoustics," D. P. Lockard, Summer 1993.
- "Attenuation Predictions for Segmented Liners in Supersonic Flow," R. W. Snider, Summer 1993.
- "A New Boundary Integral Method for Predicting the Acoustic Field Generated by Ducted Rotating Sources," J. K. Buhler, Summer 1994.
- "A Far-Field Approximation for Quadrupole Noise Prediction," P. C. Holland, Summer 1995.
- "The Effects of Convection Speed of a Random Load on a Structural-Acoustic System," J. C. Lawrence, Summer 1995.
- "A Numerical Investigation of the Influence of Lamination Angle on the Interior Noise Levels of an Aircraft," C. M. Fernholz, Summer 1996.
- "The Acoustic Field Radiated by a Propeller in a Lined Duct," M. Kosanchick, III, Summer 1996.
- "Computation of Vortex Shedding and Radiated Sound for a Circular Cylinder: Subcritical to Transcritical Reynolds Numbers," J. S. Cox, Summer 1997.

"The Radiated Field Generated by a Monopole Source in a Short, Rigid, Rectangular Duct," B. A. Lakota, Spring 1998.

"A Numerical Investigation of Thermoacoustic Oscillations," D. M. Nark, DSc Dissertation, Spring 1998.

"An Investigation Into the Control Robustness of Active Structural Acoustic Control in Aircraft Cabin Models," J. L. Caton, Summer 1998.

"A Best Choice Numerical Method for Large Scale Computations in Nacelle Acoustics," D. J. Stead, Summer 1998.

"The Effects of Impedance Nonuniformities on Sound Scattered from an Absorbing Strip in a Rigid Wall," A. T. Cochrane, Summer 1999.

"Predicting Rotorcraft High-Speed Impulsive Noise Utilizing the Method of Characteristics in Three Dimensions," W. J. Eadie, Summer 1999.

APPENDIX 4

AEROACOUSTICS RESEARCH PROGRAM IN JIAFS NCC1-14

PUBLICATIONS AND PRESENTATIONS

A-204	"Plane Waves at or Near Grazing Incidence in the Parabolic Approximation" Published: AIAA Paper No. 80-0974. Presented: AIAA 6th Aeroacoustics Conference, Hartford, CT, June 4-6, 1980.	G. L. McAninch M. K. Myers
A-205	"Acoustic Shocks in Nearly Choked Duct Flows" Published: AIAA Paper No. 80-1019. Presented: AIAA 6th Aeroacoustics Conference, Hartford, CT, June 4-6, 1980.	M. K. Myers A. J. Callegari
A-206	"On the Acoustic Boundary Condition in the Presence of Flow" Published: <u>Journal of Sound & Vib.</u> , Vol. 71, No. 3, August 1980, pp. 429-434.	M. K. Myers
A-210	"Shock Development in Sound Transmitted Through a Nearly Choked Flow" Published: AIAA Paper No. 81-2012. Presented: AIAA 7th Aeroacoustics Conference, Palo Alto, CA, October 5-7, 1981.	M. K. Myers
A-211	"Nonlinear Theory of Shocked Sound Propagation in a Nearly Duct Flow" Published: NASA CR-3549, April 1982.	M. K. Myers A. J. Callegari
A-213	"Nonlinear Propagation of Sound Through Nearly Sonic Duct Flows" Presented: 19th Annual Meeting, Society of Engineering Science, Inc., Rolla, MO, October 27-29, 1982.	M. K. Myers
A-214	"An Analysis of the Two-Dimensional Acoustic Field in a Non-Uniform Duct Carrying Compressible Flow" Published: AIAA Paper No. 83-0669. Presented: AIAA 8th Aeroacoustics Conference, Atlanta, GA, April 11-13, 1983.	K. Uenishi M. K. Myers
A-215	"Uniform Asymptotic Approximations for Duct Eigenfunctions a Thin Boundary Layer Flow" Published: AIAA Paper No. 83-0668. Presented: AIAA 8th Aeroacoustics Conference, Atlanta, GA, April 11-13, 1983.	M. K. Myers S. L. Chuang
A-216	"The Aerodynamics of Propellers and Rotors Using an Acoustic Formulation in the Time Domain" Presented: AIAA Applied Aerodynamics Conference, Danvers, MA, July 13-15, 1983. Published: AIAA Paper No. 1821, July 1983.	L. N. Long

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| A-217 | <p>"The Compressible Aerodynamics of Rotating Blades Based on an Acoustic Formulation"</p> <p>Published: NASA TP 2197, December 1983.</p> | L. N. Long |
| A-218 | <p>"Two Dimensional Nonlinear Analysis of Sound Transmission Through a Near-Sonic Throat Flow"</p> <p>Published: AIAA Paper No. 84-0497.</p> <p>Presented: AIAA 22nd Aerospace Sciences Meeting, Reno, NV, January 9-12, 1984.</p> | M. K. Myers
K. Uenishi |
| A-220 | <p>"Two-Dimensional Acoustic Field in a Nonuniform Duct Carrying Compressible Flow"</p> <p>Published: <u>AIAA Journal</u>, Vol. 22, No. 9, September 1984, pp. 1242-1248.</p> | K. Uenishi
M. K. Myers |
| A-221 | <p>"Uniform Asymptotic Approximations for Duct Acoustic Modes in a Thin Boundary-Layer Flow"</p> <p>Published: <u>AIAA Journal</u>, Vol. 22, No. 9, September 1984, pp. 1234-1241.</p> | M. K. Myers
S. L. Chuang |
| A-222 | <p>"Some Qualitative Results on the Thickness and Loading Noise of Rotating Blades"</p> <p>Published: Letter to the Editor in <u>Journal of Sound and Vibration</u>, (1985), Vol. 101 (2), pp. 262-266.</p> | F. Farassat
M. K. Myers |
| A-223 | <p>"Analytical Study of Acoustic Response of a Semireverberant Enclosure With Application to Active Noise Control"</p> <p>Published: NASA TP-2472, December 1985.</p> | T. L. Parrott
D. B. Schein
D. Gridley |
| A-224 | <p>"Generalization and Extension of the Law of Acoustic Energy Conservation in a Nonuniform Flow"</p> <p>Presented: AIAA 24th Aerospace Sciences Meeting, Reno, NV, January 6-9, 1986.</p> <p>Published: AIAA Paper 86-0471.</p> | M. K. Myers |
| A-225 | <p>"Vortex Studies Relating to Boundary Layer Turbulence and Noise" (Abstract)</p> <p>Presented: ASME Winter Annual Meeting, Miami Beach, FL, November 17-21, 1985.</p> <p>Published: NASA CP-2404.</p> | J. L. Adelman
J. C. Hardin |
| A-226 | <p>"Effects of Source Separation and Phasing on Acoustic Power in a Semi-Reverberant Space with Application to Active Noise Control" (Abstract)</p> <p>Presented: 109th Meeting of the Acoustical Society of America, Austin, TX. April 8-12, 1985.</p> <p>Abstract Published: <u>Journal of Acoustical Society of America</u>, Vol. 77, Supplement 1, Spring 1985, p. S-32.</p> | D. B. Schein
T. L. Parrott |
| A-227 | <p>"Aerodynamics Via Acoustics: Application of Acoustic Formulas for Aerodynamic Calculations"</p> <p>Presented: AIAA 10th Aeroacoustics Conference, Seattle, WA, July 9-11, 1986.</p> <p>Published: AIAA Paper 86-1877.</p> | F. Farassat
M. K. Myers |

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| A-228 | <p>"The Moving Boundary Problem for the Wave Equation: Theory and Application"</p> <p>Presented: First IMACS International Symposium on Computational Acoustics, Yale University, August 6-8, 1986.</p> | <p>F. Farassat
M. K. Myers</p> |
| A-229 | <p>"An Exact Energy Corollary for Homentropic Flow"</p> <p>Published: <u>Journal of Sound & Vib</u>, Vol. 109, No. 1, 1986, pp. 277-284.</p> | <p>M. K. Myers</p> |
| A-230 | <p>"Extension of Kirchhoff's Formula to Radiation From Moving Surfaces"</p> <p>Published: NASA TM 89149, May 1987.
Published: (in revised form) <u>Journal of Sound & Vib</u>, Vol. 123, No. 3, 1988, pp. 451-460.</p> | <p>F. Farassat
M. K. Myers</p> |
| A-231 | <p>"Experimental Evaluation of Active Noise Control in a Thin Cylindrical Shell"</p> <p>Presented: NOISE-CON 87, Pennsylvania State University, June 8-10, 1987.</p> | <p>S. B. Abler
R. J. Silcox</p> |
| A-232 | <p>"Structure and Propagation of Supersonic Singularities from Helicoidal Sources"</p> <p>Presented: AIAA 11th Aeroacoustics Conference, Palo Alto, CA, October 19-21, 1987.
Published: AIAA Paper 87-2676.</p> | <p>M. K. Myers
F. Farassat</p> |
| A-233 | <p>"Propagation of Quasipplane Waves Along an Impedance Boundary"</p> <p>Presented: AIAA 26th Aerospace Sciences Meeting, Reno, NV, January 11-14, 1988.
Published: AIAA Paper 88-0170.</p> | <p>G. L. McAninch
M. K. Myers</p> |
| A-234 | <p>"Power Flow in a Beam Using a 5-Accelerometer Probe"</p> <p>Presented: NOISE-CON 88, Purdue Univesity, June 20-22, 1988.</p> | <p>J. M. Downing
K. P. Shepherd</p> |
| A-235 | <p>"The Moving Boundary Problem for the Wave Equation: Theory and Application"</p> <p>Published: <u>Computational Acoustics: Algorithms and Applications</u> Vol. 2, Edited by D. Lee, R. L. Sternberg and M. H Shultz, North Holland, Amsterdam, 1988, pp. 21-44.</p> | <p>F. Farassat
M. K. Myers</p> |
| A-236 | <p>"Time-Dependent Inflow-Outflow Boundary Conditions for 2-D Acoustics Systems"</p> <p>Presented: AIAA 12th Aeroacoustics Conference, San Antonio, TX, April 10-12, 1989.
Published: AIAA Paper 89-1041.</p> | <p>W. Watson
M. Myers</p> |
| A-237 | <p>"Asymptotic/Numerical Analysis of Supersonic Propeller Noise"</p> <p>Presented: AIAA 12th Aeroacoustics Conference, San Antonio, TX, April 10-12, 1989.
Published: AIAA Paper 89-1078.
Published: <u>AIAA Journal</u>, Vol. 133 No. 9, September 1991, pp. 1374-1382.</p> | <p>M. Myers
R. Wydeven</p> |

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| A-238 | <p>"An Analysis of the Quadrupole Noise Source of High Speed Rotating Blades"</p> <p>Presented: 2nd IMACS Symposium on Computational Acoustics, Princeton, NJ, March 15, 1989.</p> <p>Published: <u>Computational Acoustics; Scattering, Gaussian Beams, and Aeroacoustics</u>, Vol. 2, Edited by D. Lee, A. Cakmak and R. Vichnevetsky, North-Holland, Amsterdam, 1990, pp. 227-240.</p> | <p>F. Farassat
M. K. Myers</p> |
| A-239 | <p>"High Speed Propeller Acoustics and Aerodynamics - A Boundary Element Approach"</p> <p>Published: <u>Boundary Element Methods in Engineering</u>, Edited by B. S. Annigeri and K. Tseng, Springer-Verlag, 1990, pp. 508-514.</p> <p>Presented: International Symposium on Boundary Element Methods, East Hartford, CT, October 2-4, 1989.</p> | <p>F. Farassat
M. K. Myers
M. H. Dunn</p> |
| A-240 | <p>"Author's Reply to D. L. Hawkings"</p> <p>Published: <u>Journal of Sound and Vibration</u>, Vol. 133, No. 1, August 27, 1989, p. 190.</p> | <p>F. Farassat
M. K. Myers</p> |
| A-241 | <p>"Propagation of Quasiplane Acoustic Waves Along an Impedance Boundary"</p> <p>Published: <u>AIAA Journal</u>, Vol. 27, No. 11, November 1989, pp. 1479-1486.</p> | <p>G. L. McAninch
M. K. Myers</p> |
| A-243 | <p>"On the Application of the Kirchhoff Formula For Moving Surfaces"</p> <p>Published: <u>Journal of Sound and Vibration</u>, Vol. 139, No. 1, May 22, 1990, pp. 174-178.</p> | <p>M. K. Myers
J. S. Hausmann</p> |
| A-244 | <p>"Boundary Element Analysis of Sound Scattered by a Moving Surface"</p> <p>Presented: AIAA 13th Aeroacoustics Conference, Tallahassee, FL, October 22-24, 1990.</p> <p>Published: AIAA Paper 90-3944.</p> | <p>M. Myers
J. Hausmann</p> |
| A-245 | <p>"A Boundary Integral Approach to the Scattering of Nonplanar Acoustic Waves by Rigid Bodies"</p> <p>Presented: AIAA 13th Aeroacoustics Conference, Tallahassee, FL, October 22-24, 1990.</p> <p>Published: AIAA Paper 90-3945.</p> <p>Published: <u>AIAA Journal</u>, Vol. 29, No. 12, December 1991, pp. 2038-2046.</p> | <p>J. Gallman
M. Myers
F. Farassat</p> |
| A-246 | <p>"A Two-Step Method for Evolving Acoustic Systems to a Steady-State"</p> <p>Presented: AIAA 13th Aeroacoustics Conference, Tallahassee, FL, October 22-24, 1990.</p> <p>Published: AIAA Paper 90-3946.</p> | <p>W. Watson
M. Myers</p> |
| A-247 | <p>"Active Control of the Forced and Transient Response of a Finite Beam"</p> <p>Published: NASA CR-181957, January 1990.</p> | <p>J. T. Post</p> |

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| A-248 | <p>"Active Control of the Forced Response of a Finite Beam"</p> <p>Presented: NOISE-CON 90, Austin, TX, October 15-17, 1990.</p> | <p>J. T. Post
R. J. Silcox</p> |
| A-249 | <p>"Evaluation of Water Cooled Supersonic Temperature and Pressure Probes for Application to 1366°K Flows"</p> <p>Presented: 36th International Instrumentation Symposium, Denver, CO, May 6-10, 1990.</p> | <p>N. T. Lagen
J. M. Seiner</p> |
| A-250 | <p>"Evaluation of Water Cooled Supersonic Temperature and Pressure Probes for Application to 2000°F Flows"</p> <p>Published: NASA TM-102612, June 1990.</p> | <p>N. T. Lagen
J. M. Seiner</p> |
| A-251 | <p>"Transport of Energy by Disturbances in Arbitrary Steady Flows"</p> <p>Published: <u>Journal of Fluid Mechanics</u>, Vol. 226, May 1991, pp. 383-400.</p> | <p>M. K. Myers</p> |
| A-252 | <p>"Aeroacoustics of High Speed Rotating Blades: The Mathematical Aspect"</p> <p>Presented: Third IMACS Symposium on Computational Acoustics, Harvard University, June 26-28, 1991.</p> <p><u>Extended Version Published in: Computational Acoustics - Acoustic Propagation</u>, Vol. 2, Ed. by D. Lee, R. Vichnevetsky and A. R. Robinson, North-Holland, Amsterdam, 1993, pp. 117-148.</p> | <p>F. Farassat
M. K. Myers</p> |
| A-253 | <p>"Inflow-Outflow Boundary Conditions for Two-Dimensional Acoustic Waves in Channels with Flow"</p> <p>Published: <u>AIAA Journal</u>, Vol. 29, No. 9, September 1991, pp. 1383-1389.</p> | <p>W. R. Watson
M. K. Myers</p> |
| A-254 | <p>"Correction Analysis for a Supersonic Water Cooled Total Temperature Probe Tested to 1370 K"</p> <p>Presented: 14th International Congress on Instrumentation in Aerospace Simulation Facilities, Rockville, MD, October 29-31, 1991.</p> | <p>N. T. Lagen
J. M. Seiner</p> |
| A-255 | <p>"Computation of Acoustic Scattering from a Moving Rigid Surface"</p> <p>Published: <u>Journal of Acoustical Society of America</u>, Vol. 91, No. 5, May 1992, pp. 2594-2605.</p> | <p>M. K. Myers
J. S. Hausmann</p> |
| A-256 | <p>"Numerical Computation of Steady-State Acoustic Disturbances in Flow"</p> <p>Presented: DGLR/AIAA 14th Aeroacoustics Conference, Aachen, Germany, May 11-14, 1992.</p> <p>Published: Proceedings DGLR-Bericht 92-03, Vol. I, 1992, pp. 428-437.</p> | <p>W. R. Watson
M. K. Myers</p> |
| A-258 | <p>"Two-Step Method for Evolving Nonlinear Acoustic Systems to a Steady State"</p> <p>Published: <u>AIAA Journal</u>, Vol. 30, No. 7, July 1992, pp. 1724-1730.</p> | <p>W. R. Watson
M. K. Myers</p> |

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| A-259 | <p>"Numerical Study of Active Structural Acoustic Control in a Double Wall Cylinder"</p> <p>Presented: Recent Advances in Active Control of Sound and Vibration Meeting, VPI&SU, April 28-30, 1993.</p> | <p>T. J. Coats
R. J. Silcox
H. C. Lester</p> |
| A-260 | <p>"Numerical Investigation of Sound Transmission Through Double Wall Cylinders with Respect to Active Noise Control"</p> <p>Presented: NOISE-CON '93, Williamsburg, VA, May 2-5, 1993.</p> | <p>T. J. Coats
R. J. Silcox
H. C. Lester</p> |
| A-261 | <p>"An Analytical Study of Intensity Flow for Active Structural Acoustic Control"</p> <p>Presented: 1993 SAE Noise & Vibration Conference & Exhibition, Traverse City, MI, May 10-13, 1993.</p> <p>Published: Proceedings of the 1993 SAE Noise Vibration Conference & Exhibition, Vol. P-264, pp. 183-196.</p> | <p>R. J. Silcox
H. C. Lester
T. J. Coats</p> |
| A-262 | <p>"Photographic System Makes Path of Vortex Visible"</p> <p>Published: NASA Tech Briefs, Vol. 17, No. 6, June 1993, p. 38.</p> | <p>S. B. Jones
G. Szczepkowski</p> |
| A-263 | <p>"The Influence of Quadrupole Sources on the Removal of Singularities of the Thickness and Loading Noise of Supersonic Rotating Blades"</p> <p>Presented: International Conference on Theoretical and Computational Acoustics, Yale University, CT, July 5-9, 1993.</p> | <p>F. Farassat
M. K. Myers</p> |
| A-264 | <p>"A Numerical Investigation of Baffled Piston Sound Generation"</p> <p>Presented: ASME Forum on Computational Aero- and Hydro-Acoustics, Washington, DC, June 20-23, 1993.</p> | <p>D. M. Nark</p> |
| A-265 | <p>"Direct Simulation: Review and Comments"</p> <p>Published: <u>Computational Aeroacoustics</u>, Ed. by J. C. Hardin and M. Y. Hussaini, Springer-Verlag, 1993, pp. 283-293.</p> | <p>M. K. Myers</p> |
| A-266 | <p>"Sound Radiation from Ducted Rotating Sources in Uniform Motion"</p> <p>Presented: 15th AIAA Aeroacoustics Conference, Long Beach, CA, October 25-27, 1993.</p> <p>Published: AIAA Paper 93-4429.</p> | <p>M. K. Myers
J. H. Lan</p> |
| A-267 | <p>"Line Source Singularity in the Wave Equation and Its Removal by Quadrupole Sources - A Supersonic Propeller Noise Problem"</p> <p>Published: <u>Theoretical and Computational Acoustics: Structural Acoustics, Scattering and Propagation</u>, Vol. 1, Edited by J. E. Ffowcs Williams, D. Lee, and A. D. Pierce World Scientific Publishing Co., Singapore, 1994, pp. 29-43.</p> | <p>F. Farassat
M. K. Myers</p> |
| A-268 | <p>"High Accuracy Algorithms for Computational Aeroacoustics"</p> <p>Presented: 32nd AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 10-13, 1994.</p> <p>Published: AIAA Paper 94-0460.</p> <p>Published: <u>AIAA Journal</u>, Vol. 33, No. 2, pp. 246-251, February 1995.</p> | <p>D. P. Lockard
K. S. Brentner
H. L. Atkins</p> |

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| A-269 | <p>"A Numerical Study of Active Structural Acoustic Control in Stiffened, Double Wall Cylinder"</p> <p>Presented: 1994 National Conference on Noise Control Engineering, Fort Lauderdale, FL, May 1-4, 1994.</p> <p>Published: Proceedings of the 1994 National Conference on Noise Control Engineering, pp. 403-408.</p> | <p>F. W. Grosveld
T. J. Coats
H. C. Lester
R. J. Silcox</p> |
| A-270 | <p>"The Use of Staggered Schemes and an Absorbing Buffer Zone for Computational Aeroacoustics"</p> <p>Published: Proceedings of the ICASE/LaRc Workshop on Benchmark Problems in Computational Aeroacoustics (CAA), Hampton, VA, October 24-26, 1994.</p> | <p>D. M. Nark</p> |
| A-271 | <p>"Kirchhoff Formula for Supersonic Surfaces"</p> <p>Presented: ASME Int'l. Mechanical Engineering Congress and Exposition, Chicago, IL, November 6-11, 1994.</p> | <p>F. Farassat
M. K. Myers</p> |
| A-272 | <p>"An Absorbing Buffer Zone Technique for Acoustic Wave Propagation"</p> <p>Presented: 33rd AIAA Aerospace Science Meeting, Reno, NV, January 9-12, 1995.</p> <p>Published: AIAA Paper No. 95-0164.</p> | <p>S. Ta'asan
D. M. Nark</p> |
| A-273 | <p>"An Approximate Theoretical Method for Modeling the Static Thrust Performance of Non-axisymmetric Two-Dimensional Convergent-Divergent Nozzles"</p> <p>Published: NASA CR-195050, March 1995.</p> | <p>C. A. Hunter</p> |
| A-274 | <p>"Boundary Integral Formulations for Ducted Fan Radiation Calculations"</p> <p>Presented: First Joint CEAS/AIAA Aeroacoustics Conference, (16th AIAA Conference), Munich, Germany, June 12-15, 1995.</p> <p>Published in Conference Proceedings, DGLR-Bericht 95-01, Vol. 1, pp. 565-573.</p> <p>Published: Paper No. CEAS/AIAA-95-076.</p> | <p>M. K. Myers</p> |
| A-275 | <p>"The Kirchhoff Formula for a Supersonically Moving Surface"</p> <p>Presented: First Joint CEAS/AIAA Aeroacoustics Conference, (16th AIAA Conference), Munich, Germany, June 12-15, 1995.</p> <p>Published: Conference Proceedings, DGLR-Bericht 95-01, Vol. 1, pp. 475-480.</p> <p>Published: Paper No. CEAS/AIAA-95-062.</p> | <p>F. Farassat
M. K. Myers</p> |
| A-276 | <p>"Boundary Integral Computational Schemes for Radiation from Ducted Sources"</p> <p>Invited Plenary Lecture, 2nd International Conference on Theoretical and Computational Acoustics, Honolulu, HI, August 22, 1995.</p> | <p>M. K. Myers</p> |

A-277	<p>"An Efficient and Robust Method for Computing Quadrupole Noise"</p> <p>Presented: American Helicopter Society 1995 Aeromechanics Specialist Conference, Fairfield County, CT, October 11-13, 1995.</p>	P. C. Holland
A-278	<p>"A Far-Field Approximation for High-Speed Impulsive Noise Prediction"</p> <p>Presented: 1995 AIAA Mid Atlantic Regional Student Conference, The George Washington University, Hampton, VA, April 21-21, 1995.</p> <p>Presented: 34th Aerospace Sciences Meeting and Exhibit Reno, NV, January 15-18, 1996.</p>	P. C. Holland
A-279	<p>"The Acoustic Field of a Ducted Propeller Using the Pressure Formulation"</p> <p>Presented: 1996 AIAA Region I Mid-Atlantic Student Conference, University of Maryland, MD, April 12-13, 1996.</p>	M. Kosanchick, III
A-280	<p>"A Study of Wave Propagation in a Duct and Mode Radiation"</p> <p>Presented: 2nd AIAA/CEAS Aeroacoustics Conference, State College, PA, May 7, 1996.</p> <p>Published: AIAA Paper No. 96-1677.</p>	F. Farassat M. K. Myers
A-281	<p>"Disturbance Energy Propagation in Mean Flows"</p> <p>Invited paper, Euromech 352-Symposium on Mean Flow Effects in Acoustics, University of Keele, U. K., July 10, 1996.</p>	M. K. Myers
A-282	<p>"An Investigation of the Influence of Composite Lamination Angle on the Interior Noise Levels of a Beech Starship"</p> <p>Presented: Noise-Con 96, Seattle, WA, September 29-October 2, 1996.</p> <p>Published: Conference Proceedings.</p>	C. M. Fernholz J. H. Robinson
A-283	<p>"A Simple Application of Nonstandard Analysis to Forced Vibration of a Spring-Mass System"</p> <p>Published: <u>Journal of Sound & Vib.</u>, Vol. 195, No. 2, August 15, 1996, pp. 340-345.</p>	F. Farassat M. K. Myers
A-284	<p>"A Computational Aeroacoustics Approach to Duct Acoustics"</p> <p>Presented: 2nd Computational Aeroacoustics Workshop on Benchmark Problems, Turnbull Conference Center, Tallahassee, FL, November 4-5, 1996.</p> <p>Published: Proceedings of the 2nd Computational Aeroacoustics Workshop on Benchmark Problems.</p>	D. N. Nark
A-285	<p>"Computation of Sound Generated by Flow Over a Circular Cylinder: An Acoustic Analogy Approach"</p> <p>Presented: 2nd Computational Aeroacoustics Workshop on Benchmark Problems, Tallahassee, FL, November 4-5, 1996.</p> <p>Published: Proceedings of the Second Computational Aeroacoustics Workshop on Benchmark Problems.</p>	K. S. Brentner J. S. Cox C. L. Rumsey B. A. Younis

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| A-286 | <p>"Fully-Coupled Fluid/Structure Vibration Analysis Using MSC/NASTRAN"</p> <p>Published: NASA TM-110215, January 1996.</p> | <p>C. M. Fernholz
J. H. Robinson</p> |
| A-287 | <p>"The Influence of Lamination Angles on Interior Noise Levels of an Aircraft"</p> <p>Published: NASA TM-110250, August, 1996.</p> | <p>C. M. Fernholz
J. H. Robinson</p> |
| A-288 | <p>"A Passive Cavity Concept for Improving the Off-Design Performance of Fixed-Geometry Exhaust Nozzles"</p> <p>Presented: 32nd AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Lake Buena Vista, FL, July 1-3, 1996.</p> <p>Published: AIAA Paper 96-2541.</p> | <p>S. C. Asbury
C. A. Hunter
C. L. Gunther</p> |
| A-289 | <p>"A Graphical Approach to Wave Propagation in a Rigid Duct"</p> <p>Published: <u>Journal of Sound and Vib.</u>, Vol. 200, No. 5, March 13, 1997, pp. 729-735.</p> | <p>F. Farassat
M. K. Myers</p> |
| A-290 | <p>"Noise Prediction of Viscous Flow Over a Circular Cylinder: Subcritical to Transcritical Reynolds Numbers"</p> <p>Presented: AIAA 1997 Region I Mid-Atlantic Student Conference Old Dominion University, Norfolk, VA, April 18-19, 1997.</p> | <p>J. S. Cox</p> |
| A-291 | <p>"Computation of Sound Radiated from a Fan in a Short Lined Duct"</p> <p>Presented: 3rd AIAA/CEAS Aeroacoustics Conference, Atlanta, Georgia, May 14, 1997.</p> <p>Published: AIAA CP974, Proceedings of 3rd AIAA/CEAS Aeroacoustics Conference (18th AIAA Aeroacoustics Conference), AIAA-97-1711-CP, pp. 951-960.</p> | <p>M. K. Myers
M. Kosanchick, III</p> |
| A-292 | <p>"Radiation of Sound from a Point Source in a Short Duct"</p> <p>Published: Proceedings of Second Computational Aeroacoustics (CAA) Workshop on Benchmark Problems, Edited by C. K. W. Tam and J. C. Hardin, NASA Conference Publication 3352, June 1997, pp. 19-26.</p> | <p>M. K. Myers</p> |
| A-293 | <p>"Computation of Vortex Shedding and Radiated Sound for a Circular Cylinder"</p> <p>Presented: Fourth International Symposium on Fluid-Structure Interactions, Aeroelasticity, Flow-Induced Vibrations and Noise, Dallas, TX, November 16-21, 1997.</p> <p>Published: Proceedings of the Symposium.</p> | <p>J. S. Cox
C. L. Rumsey
K. S. Brentner
B. A. Younis</p> |
| A-294 | <p>"Computation of Sound Generated by Viscous Flow Over a Circular Cylinder"</p> <p>Published: NASA TM-110339, March 1997.</p> | <p>J. S. Cox
C. L. Rumsey
K. S. Brentner
B. A. Younis</p> |
| A-295 | <p>"Experimental, Theoretical, and Computational Investigation of Separated Nozzle Flows"</p> <p>Presented: 34th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Cleveland, OH, July 13-15, 1998.</p> <p>Published: AIAA 98-3107.</p> | <p>C. A. Hunter</p> |

- A-296 "High-Speed Impulsive Noise Propagation"
Presented: 1999 AIAA Mid-Atlantic Region 1 Student Conference,
University of Virginia, Charlottesville, VA, April 16-17, 1999. W. J. Eadie
- A-297 "Acoustics of Nonuniform Locally Reacting Absorbers"
Presented: 5th AIAA/CEAS Aeroacoustics Conference, Bellevue
(Greater Seattle), WA, May 10-12, 1999. M. K. Myers
Published: AIAA 99-1824. A. T. Cochrane
- A-298 "Computation of Vortex Shedding and Radiated Sound for a Circular
Cylinder: Subcritical to Transcritical Reynolds Numbers"
Published: Theoretical and Computational Fluid Dynamics Journal,
Vol. 12, No. 4, 1998, pp. 233-253. J. S. Cox
K. S. Brentner
C. L. Rumsey
- A-299 "Broadband Transmission Loss Due to Reverberant Excitation"
Published: NASA/CR-1999-209687, November 1999. L. P. Barisciano, Jr.

APPENDIX 5

AEROACOUSTICS RESEARCH PROGRAM IN JIAFS NCC1-14

GRADUATE RESEARCH SCHOLAR ASSISTANTS EMPLOYMENT UPON GRADUATION

NASA-Langley Research Center

Craig A. Hunter	-	NASA Langley (MS/93 - continuing DSc studies)
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CONTRACTOR/NASA LaRC

Michael G. Jones	81	PRC/Kentron @NASA Langley
Nicholas T. Lagen	90	Lockheed @NASA Langley
Ernest M. Thurlow	92	Lockheed @NASA Langley
Nark, Douglas M.	98/DSc	Hampton U @NASA LaRC (now CompSciCorp@NASA LaRC)

OTHER GOVERNMENT

Judith M. Hoeffner	88	Army @NASA Ames
Lakota, Barbara A.	98	Naval Surface Warfare Ctr, Indian Head, MD

INDUSTRY

Sue-Li Chuang	83/DSc	GE Aircraft Engines, Cincinnati (Carrier Corp., Syracuse, NY)
Lyle N. Long	83/DSc	Lockheed, CA (now Assoc. Prof. @Penn State Univ.)
Kenji Uenishi	83/DSc	GE Aircraft Engines, Cincinnati
Jeffrey L. Adelman	85	Aeroflex Systems Corp., DC
Perry R. Ziegenbein	85	Boeing/Vertol, PA
Christian J. Schwindt	86	Sikorsky, CT (Douglas A/C, CA, now in FL)
H. Gail Sandford	87	Douglas Aircraft, CA
Steven B. Abler	88	Northrup, CA
Gregory T. Szczepkowski	89	GE Aircraft Engines, OH
Richard Wydeven	89	Bell Helicopter, TX
J. Scott Hausmann	90	Northrup, CA
Timothy J. Coats	93	Environmental Career Orgn., Seattle, WA
Royce W. Snider	93	Boeing Vertol, Philadelphia, PA
Jonathon C. Lawrence	95	Ford Motor Co., MI
Peter C. Holland	95	Allison Engine Co., IN
Melvin Kosanchick, III	96	Boeing, Seattle, WA
Christian M. Fernholz	96	Ford Motor Comp, Dearborn, MI
Jared S. Cox	97	McDonnell Douglas, Long Beach, CA
Barisciano, Lawrence P.	98	Lockheed Martin, Baltimore, MD
Caton, Jason L.	98	General Motors, Warren, MI
Stead, Daniel J.	98	Lockheed Martin Engineering & Sciences @NASA Langley
Eadie, William J.	99	Sikorsky Aircraft, Stratford, CT

UNIVERSITIES

Robert L. Milliken	86	RPI (DSc) (Bell Helicopter, Textron, Ft Worth, TX)
J. Micah Downing	88	Georgia Tech (DSc) (Wright-Patterson)
John T. Post	89	Texas A&M (DSc)(now U. of Texas (DSc))
Douglas M. Nark	92/MS	GW/JIAFS (DSc) (now emp/Hampton Univ)
Justin H. Lan	93	University of Washington (DSc)
David P. Lockard	93	Penn State University (DSc)
Cochrane, Andrew T.	99	Northwestern University (DSc)